

## COMMONWEALTH ENSILAGE-MAKING, 1912-13 to 1916-17.

State or Territory.	1912-13.		1913-14.		1914-15.		1915-16.		1916-17.	
	*Holdings.	Ensilage Made.	*Holdings.	Ensilage Made.	*Holdings.	Ensilage Made.	*Holdings.	Ensilage Made.	*Holdings.	Ensilage Made.
New South Wales ...	No. 144	Tons. 18,509	No. 129	Tons. 18,358	No. 83	Tons. 10,963	No. 130	Tons. 18,511	No. 119	Tons. 16,636
Victoria ...	237	17,877	270	19,505	161	9,055	269	16,356	179	10,974
Queensland ...	58	4,156	75	4,273	52	3,363	37	3,012	70	5,115
South Australia ...	28	2,200	16	778	6	681	43	1,688	20	1,795
Western Australia ...	23	479	23	658	11	403	12	518	12	278
Tasmania ...	20	424	17	662	10	231	17	849	7	114
Federal Territory ...	1	10	1	8	...	...	...	...	...	...
Northern Territory ...	...	...	...	...	...	...	...	...	1	55
Commonwealth ...	561	43,655	530	44,242	323	24,696	508	40,934	408	34,967

\* No. of holdings on which ensilage was made.

Following the drought of 1902-3 greater attention was paid to ensilage than was previously the case, and during the four seasons ended 1909-10 a continuous and fairly rapid increase was in evidence in all the States, both in the number of holdings on which ensilage was made, and in the quantity produced. The following five seasons, however, shewed a falling-off, but the reduction cannot be accepted as an indication of a lessening of appreciation of the benefits of ensilage, but rather of the fact that stocks had not been drawn upon to any great extent during the previous seasons. The accumulated stocks proved of very great value during the 1914 drought, though far below what would have been the case if more attention had been paid to ensilage-making during the previous years of surplus green food. A very substantial increase took place in 1915-16, both in the holdings on which ensilage was made and in the quantity produced, but 1916-17 returns shew a falling-off in all the States with the exception of Queensland.

## § 20. Agricultural Colleges and Experimental Farms.

1. **Introduction.**—In most of the States, agricultural colleges and experimental farms have been established with a view to promoting agriculture and to establishing improved and more scientific systems of stock-breeding and dairying. In these colleges, and on some of the farms, provision is made for the accommodation of pupils, to whom both practical and theoretical instruction is given by experts in various branches of agriculture. Analyses of soils and fertilisers are made, manures are tested, and elementary veterinary science, etc., is taught, while general experimental work is carried on with cereal and other crops, not merely for the purpose of shewing that it is practicable to produce certain crops in a given place, but also to shew how it is possible to make farming pay best in that locality. Opportunities are afforded for practice in general agricultural work, and instruction is given in the conservation of fodder; in cheese and butter making; in the management, breeding, and preparation for the market of live stock; in the eradication of pests and weeds; and in carpenters', blacksmiths', and other trades.

Travelling expert lecturers are sent to the various agricultural and dairying centres, and there is a wide distribution of periodical agricultural gazettes and bulletins on matters of importance at special seasons.

2. **Particulars of Agricultural Colleges and Experimental Farms.**—In the tables given herewith, particulars of agricultural colleges and experimental farms in the several States of the Commonwealth in 1916-17 are shewn.

**PARTICULARS OF AGRICULTURAL COLLEGES AND EXPERIMENTAL FARMS IN THE SEVERAL STATES OF THE COMMONWEALTH DURING THE SEASON 1916-17.**

Particulars.	Unit of Quantity.	New South Wales.	Vic.	Q'land.	South Aust.	West. Aust.	Tasmania.	Northern Terr.	C'with.
No. of agricultural colleges	No.	1	2	1	1	1	...	...	6
" experimental farms ...	"	23	5	5	9	6	1	2	51
" students ...	"	170	164	29	30	15	*	...	408
" hands employed ...	"	393	118	74	96	67	9	10	767
Value of plant & machinery	£	40,766	9,990	9,391	10,908	8,023	1,507	1,700	82,285
produce for year ...	"	42,731	22,600	4,033	13,992	22,508	1,200	2,000	109,064
Receipts—									
Government grant ...	"	78,446	17,583	18,085	17,167	18,658	1,736	3,229	154,904
Fees ...	"	2,039	2,049	714	1,237	364	*	...	8,403
Sales of produce, &c. ...	"	47,541	18,470	6,365	7,861	31,264	1,011	139	118,308
Other ...	"	1,843	919	...	1,672	669	529	25	...
Total receipts ...	"	131,869	39,021	25,164	27,937	50,955	3,276	3,393	281,615
Expenditure—									
Salaries, professional ...	"	8,839	5,122	3,631	4,094	473	350	650	23,159
general ...	"	53,402	12,650	5,582	8,087	9,847	1,032	1,268	91,868
Buildings & maintenance	"	21,913	14,094	15,951	7,940	5,557	107	1,474	166,586
Other ...	"	47,715	7,155	...	7,816	35,078	1,787	1	...
Total expenditure ...	"	131,869	39,021	25,164	27,937	50,955	3,276	3,393	281,615
Agriculture, &c.—									
Area under cereals for grain	Acres	2,457	2,136	355	1,875	7,069	96	150	14,138
" hay ...	"	2,576	734	454	654	737	...	90	5,245
" fruit trees, &c. ...	"	294	96	16	100	13	40	25	584
" vines ...	"	159	91	7	62	1	...	...	320
" green fodder ...	"	1,016	610	254	309	312	...	53	2,554
" root crops ...	"	81	...	24	6	6	6	5	128
" other crops ...	"	136	184	91	117	25	...	51	604
Total under crop ...	"	6,719	3,851	1,201	3,123	8,163	142	374	23,573
Area of land in fallow ...	"	1,340	1,709	112	1,916	1,864	27	231	7,199
" under artificially sown grasses	"	945	88	540	10	121	419	44	2,167
New ground broken up during season ...	"	317	47	76	...	100	...	91	631
Previously cropped land lying idle ...	"	2,984	1,737	451	1,870	9,468	...	25	16,535
Total area of arable land	"	12,305	7,432	2,380	6,919	19,716	588	765	50,105
Balance of area ...	"	29,246	4,995	14,037	7,447	135,546	90	4,670	196,031
Total area ...	"	41,551	12,427	16,417	14,366	155,262	678	5,435	246,136
Live stock—									
Horses ...	No.	740	293	220	274	221	11	173	1,933
Dairy cows ...	"	585	195	134	82	90	33	70	1,189
All other cattle ...	"	494	217	453	73	1,890	43	231	3,401
Sheep ...	"	13,093	3,520	1,954	3,250	8,062	231	50	30,160
Pigs ...	"	733	233	234	315	332	32	52	1,931
Capacity of tanks or dams ...	Gal.	33,860,995	7,900,000	235,100	824,200	†205,000	20,000	11,150	43,056,445

\* Closed temporarily to students during war. † Incomplete.

3. New South Wales.—In order to meet the demand for agricultural training, and for the purpose of conducting experiments in various branches of agriculture and of disseminating agricultural knowledge, an agricultural college and farm and twenty-three experimental farms, including two viticultural nurseries and an apiary, have been established by the New South Wales Government. Theoretical instruction in agriculture,

with practical illustrations, forms part of the curriculum of the Sydney Technical College. The School of Agriculture in the Sydney University, which has been established for seven years, is doing very satisfactory work. At the Hurlstone Continuation College there is a special course in both theoretical and practical agriculture for teachers. Instruction in "nature knowledge" is given in the State primary schools, many of which have their own experimental plots. As a means of further encouraging the study of agriculture, the Department of Public Instruction has a travelling inspector in agriculture, whose duty it is to visit the country and metropolitan schools, lecturing on the value, necessity, and advantages of agricultural knowledge, and giving practical demonstrations wherever practicable.

4. **Victoria.**—In 1884, the Agricultural Colleges Act, passed to make provision for the establishment of agricultural colleges and experimental farms in Victoria, provided for the permanent reservation from sale of 150,000 acres of Crown lands by way of endowment of agricultural colleges and experimental farms, which, together with other lands reserved as sites for such institutions prior to the passing of the Act, are vested in three trustees appointed by the Governor. Provision was made for the appointment of a Council of Agricultural Education, consisting of eleven members, five of whom are elected by the members of the Agricultural Societies of the State, five are nominated by the Governor, whilst the Secretary for Agriculture is also a member of the Council and its Treasurer. Two agricultural colleges and five experimental farms, orchards and vineyards were in existence in different parts of the State during 1916-17. There are five Agricultural High Schools under the control of the Education Department, while elementary experimental agriculture is taught at many of the State primary schools. Instruction in agriculture is also given at the technical schools at Melbourne and Bairnsdale.

5. **Queensland.**—Organised experimental agriculture in Queensland dates from the establishment of the Department of Agriculture and Stock, but such work as has been done in connection with stock-breeding, other than that carried on by private individuals, has been of later birth, and has been confined to dairy stock and draught horses. Agriculture in Queensland in the early nineties was upon the well-defined lines of the other States, so that the knowledge to be gained as to what could be profitably adapted to Queensland, with its varied climate and rainfall, covered a wide field. Instructors were appointed conversant with the different lines of agriculture, of which grain cultivation, dairying, fruit-growing, tobacco cultivation, and tropical agriculture, such as sugar, rubber and spices, are the most important. This has been followed by the establishment of an agricultural college, of farms in the temperate parts of the State, and of nurseries in the tropical parts. With wheaten grain, a system of experiments has been carried out for some years with the distinctive object of evolving a type of wheat adapted for Queensland, and as far as possible resistant to the attacks of rust. In dairying, a commencement was made by despatching to the different farming centres properly equipped travelling dairies with the latest appliances. The export of Queensland dairy produce has arisen through this effort. No travelling dairies are, however, now employed. A fruit farm has been established, at which fruits suitable for or likely to adapt themselves to the Queensland climate and conditions have been experimented with during a series of years. To cope with the insect and fungus pests to which such fruits are peculiarly susceptible, careful inspection is made of fruits in the markets and for export, and every effort is put forth to prevent the introduction of fresh diseases and to exterminate those which are already within the State.

6. **South Australia.**—To this State belongs the honour of starting the first experimental farm in the Commonwealth. As far back as the year 1879 a resolution was passed by the local Parliament in favour of the establishment of a School of Agriculture, with an experimental farm, under the charge of a professor of agriculture. Active operations in this connection were commenced in 1882, when the first series of plots of wheat were sown at Roseworthy. Experimental work, chiefly directed towards improving

the wheat yield, has been developed along three main lines, viz.: (a) the improvement of varieties of wheat, (b) the improvement of methods of cultivation, and (c) the use of manures. The Central Agricultural Bureau, established at Adelaide under the control of an Advisory Board, has an extensive membership distributed throughout the agricultural districts of the State. It assists farmers by the dissemination of knowledge; by helping to introduce new economic plants; by improving the breed of stock; and it acts as a means of keeping the Agricultural Department in touch with the producers. The branches of the bureau hold meetings at regular intervals in their several districts, ideas and methods as regards practical subjects are interchanged, and discussions are held on matters of general interest to agriculturists.

7. **Western Australia.**—A considerable amount of developmental work has been done of late years towards the promulgation of agricultural knowledge on the State agricultural college at Narrogin, on the experimental farms at Brunswick, Merredin, Denmark and Chapman and on the State farms at Avondale and Yandanooka carried on as business undertakings.

8. **Tasmania.**—In Tasmania there is a Council of Agriculture consisting of eleven members, whose duties are to collect and publish information of every kind calculated to prove beneficial to agriculturists, such as suitability of various districts for growth or production of animal and vegetable products, information respecting plants, methods of cultivation, breeding and feeding animals, and how best to improve the same; to prevent as far as possible the introduction and spread of diseases and pests, and to publish bulletins, abstracts, and reports containing all such information as may be desirable. Other matters embrace the employment of experts in any branch of agricultural science, distribution of plants and seeds for experiment, and the establishment of local boards of agriculture in different parts of the State. Lectures are given by the experts from time to time, and useful information and knowledge is diffused by means of the monthly gazette published by the Council, and also by means of special bulletins. There is an agricultural college and State farm consisting of 678 acres, which commenced operations during 1914, but the admission of students has been temporarily suspended during the war. Practically no agricultural teaching is given in the elementary schools.

## § 21. Government Loans to Farmers.

1. **Introduction.**—All the Australian States have established systems under which financial aid is rendered to agriculturists by the Government. The principle upon which such aid is founded was probably first practically applied in Germany, in the year 1770, when the *Landschaften Bank* was created. The establishment of the *Crédit Foncier* nearly a century later in France was a creation of a similar character. This latter institution was designed to enable house and land owners to raise money on mortgage at a low rate of interest, with facility for repayment by annual instalments including redemption of the capital. It dates from 1852, but the mortgage bank known as the *Caisse Hypothécaire*, which, after a struggling existence, was finally liquidated in 1864, was based essentially on the same principle. Over the operations of the *Crédit Foncier*, created under governmental patronage and invested with such special privileges as to virtually constitute it a monopoly, the Government exercised a direct control, by appointing its governor and its two deputy-governors. The *Crédit Foncier* was empowered to lend money only on a first mortgage, and to the amount of one-half of the estimated value of houses and farms, and one-third that of vineyards, woods, and other plantations, and the commission charged could not exceed six-tenths per cent. The system developed and adopted in the Commonwealth, with the object of assisting farmers to make improvements or to develop or utilise the agricultural or pastoral resources of the land, is analogous. Particulars of advances made under the Closer Settlement and similar Acts are dealt with in the section on Closer Settlement. (See pages 272 *et seq.*)